

REVIEW OF THE GENUS ACRIA MEYRICK (LEPIDOPTERA, ELACHISTIDAE, DEPRESSARIINAE) FROM CHINA

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Abstract The genus *Acria* Meyrick is reviewed from China. Five species are reported, including two new species, *A. equibicruris* Wang, sp. nov. and *A. omithorrhyncha* Wang, sp. nov. Images of the adults and the figures of male and female genitalia are provided. A key for the identification of the known Chinese species is included.
Key words Lepidoptera, Elachistidae, Depressariinae, *Acria*, new species, China.

The genus *Acria* Stephens, 1834 was originally included in Cryptophasidae. Hodges (1978) transferred it to the subfamily Depressariinae in Oecophoridae. Hodges (1999) and Kaila (2004) regarded Depressariinae as a subfamily of Elachistidae after a phylogenetic study of the superfamily Gelechioidea, and we accept this treatment in the present study.
Acria includes about 12 species worldwide (Meyrick 1905, 1908, 1915, 1923, 1930; Clarke, 1955), distributed mainly in India, Sri Lanka and China. The aim of the present paper is to review the genus and describe two new species. All the specimens, including the types of the new species, are deposited in the Insect Collection of Nankai University, Tianjin, China.

Acria Stephens, 1834

Acria Stephens, 1834. *Illustr. Br. Ent.*, (Haustellata) 4: 218.
Tisbra Walker, 1864. *List Specimens lepd. Insects Colln Br. Mus.*, 29: 830.
Amphoritis Meyrick, 1905. *J. Bombay Nat. Hist. Soc.*, 16: 601.

Type species: *Phalaena emarginella* Donovan, 1806, by monotypy.
Diagnosis. This genus is characterized by the third segment of the labial palpus equal to or slightly longer than the second segment; the costal margin of the forewing having a shallow notch, formed by the scales on either side of it being longer than usual; R₄ absent, CuA₁ separate from CuA₂; the male valva symmetrical or asymmetrical; and the female having developed appendix bursae.

Key to species of Acria Meyrick in China (based on genital structures)

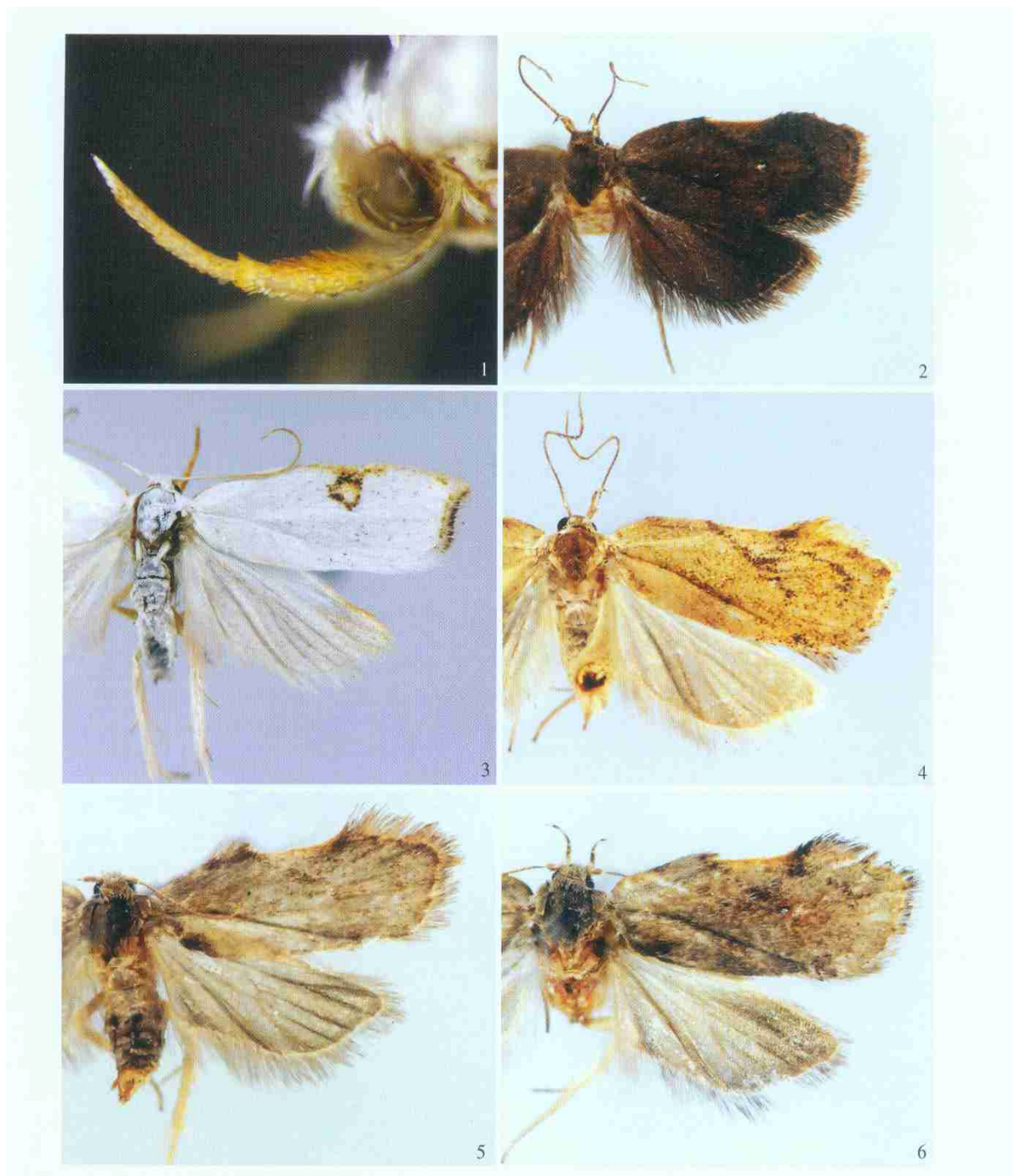
- 1. Valva asymmetrical, right valva longer than left one *A. emarginella* Donovan
Valva symmetrical 2
- 2. Valva with two tip pointed apical processes 3
Valva rounded apically or with beaklike apical process 4
- 3. Two apical processes nearly equal in length *A. equibicruris* Wang, sp. nov.
Ventral process longer than dorsal one *A. ceramitis* Meyrick

- 4. Valva rounded apically; female appendix bursae less than 1/4 length of corpus bursae *A. nivalis* Wang et Li
Valva with beaklike apical process; female appendix bursae almost as long as corpus bursae *A. ornithorrhyncha* Wang, sp. nov.

Acria ceramitis Meyrick, 1908 (Figs. 2, 7, 12)
Acria ceramitis Meyrick, 1908. *Journ. Bombay Nat. Hist. Soc.*, 18: 636.

Adult (Fig. 2). Wing expanse 11.5–15.0 mm.
Male genitalia (Fig. 7). As illustrated.
Female genitalia (Fig. 12). As illustrated.
Material examined. Guizhou Province: 3 ♀♀, Chishui County, 240 m, 21–27 Sep. 2000, coll. YU Hai-Li; 1 ♀, Xishui County, 500 m, 28 Sep. 2000, coll. YU Hai-Li; 10 ♂♂, 6♀♀, Majiang County, 700–800 m, 29 Sep. 3–6 Oct. 2007, coll. ZHENG Hui; Hunan Province: 1 ♀, Zhangjiajie, 650 m, 7 Aug. 2001, coll. LI Hour-Hun and WANG Xin-Pu; 1 ♀, Taqiang County, 26 July 2004, coll. XIAO Yun-Li; 2 ♂♂, 1 ♀, Xinhua County (27°44' N, 111°18' E), 4–8 Aug. 2004, coll. XIAO Yun-Li; Hubei Province: 1 ♂, 2 ♀♀, Xianfeng County, 1280 m, 21–22 July 1999, coll. LI Hour-Hun et al.; 4 ♂♂, Hefeng County, 1260 m, 15–16 July 1999, coll. LI Hour-Hun et al.; 1 ♀, Shennongjia Nature Reserves (31°45' N, 110°40' E), 1100 m, 18 July 2003, coll. HAO Shu-Lian; 1 ♀, Wen County, Gansu Province, 860 m, 11 July 2005, coll. YU Hai-Li; Henan Province: 1 ♂, 1 ♀, Neixiang County, 650 m, 12 July 1998, coll. LI Hour-Hun; 1 ♂, Luoshan County, 350 m, 21 May 2000, coll. YU Hai-Li; 2 ♀♀, Tongbo County, 300 m, 14 Sep. 2000, coll. LI Hour-Hun & Karsholt; 1 ♂, Liangshan County, Shandong Province, 26 July 1995, coll. LI Shi-Jin; 1 ♂, Luxian County, Sichuan Province, 27 July 1995, coll. ZENG Yong-Xing; Shaanxi Province: 1 ♂, 1 ♀, Ningshan County, 880 m, 17 June 1987, coll. LI Hour-Hun; 1 ♂, Yangling, 450 m, 9 June 1993, coll. LI Hour-Hun; 1 ♀, Danfeng County, 680 m, 29 May 1994, coll. ZHOU Jin;

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Figs 1-6. Adults of *Acria* spp. 1, 3. *A. nivalis* Wang & Li. 2. *A. ceramitis* Meyrick. 4. *A. emarginella* Donovan. 5. *A. equilibarivis* Wang, sp. nov. 6. *A. ornithorhyncha* Wang, sp. nov.

2 ♂♂, 2♀♀, Ankang, 800 m, 2-5 July 2003, coll. YU Hai-Li.

Host plant: *Malus pumila* Mill.

Distribution China (Gansu, Guizhou, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Shandong, Shanghai, Sichuan); India, Korea, Japan.

Acria nivalis Wang & Li, 2000 (Figs. 1, 3, 8, 13)

Acria nivalis Wang & Li, 2002. In: Shen *et al.* (eds.), The Fauna and Taxonomy of Insects in Henan. 4: 59.

Adult (Fig. 3). Wing expanse 18.0-21.0 mm.

Male genitalia (Fig. 8). As illustrated.

Female genitalia (Fig. 13). As illustrated.

Material examined. Holotype ♂, Neixiang County (33°02'N, 111°50'E), Henan Province, 1 350 m, 13 July 1998, coll. LI Hour-Hun. Paratypes 9 ♂♂, 8♀♀, 12-15 July 1998, other same data as for holotype. Additional material: 3♀♀, Luoyang City, Henan Province, 1 560 m, 22 July 2001, coll. ZHANG Darr-Dan; 2 ♂♂, 2♀♀, Song County, Henan Province, 1 580 m, 18-20 July 2002, coll. WANG Xirr

Pu.

Distribution. China (Henan) .

Acria emarginella **Donovan, 1804** (Figs. 4, 9, 14)

Acria emarginella Donovan, 1804. *Nat. Hist. Brit. Ins.*, 11: 90; Moriuti, In: Inoue *et al.* (eds), 1982, *Moths of Japan*, 248.

Adult (Fig. 4) . Wing expanse 19.0-23.0 mm.

Male genitalia (Fig. 9) . As illustrated.

Female genitalia (Fig. 14) . As illustrated.

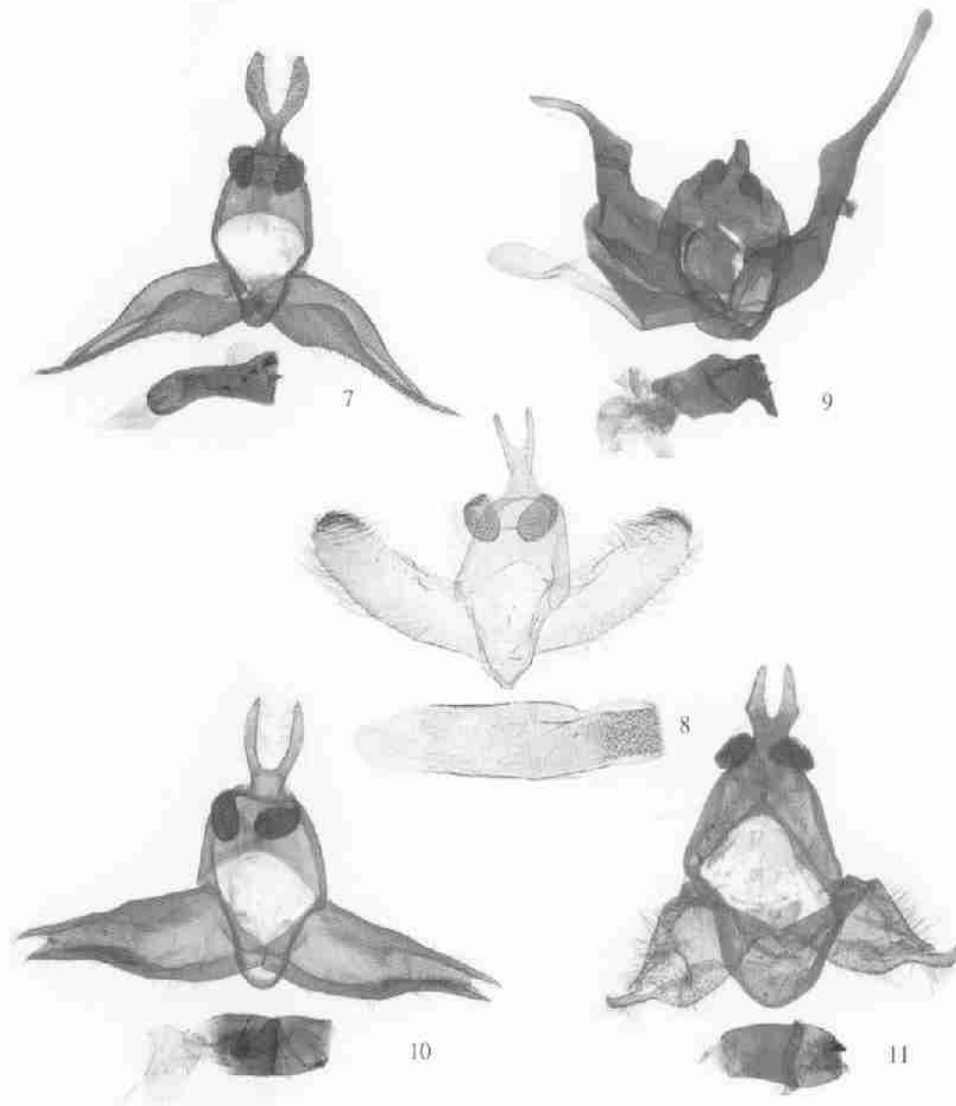
Material examined. 3 ♂♂, Mt. Tianmu, Zhejiang Province, 1 140-1 500 m, 17-18 Aug. 1999, coll. II Hour-Hun *et al.*; 3 ♂♂, 1 ♀, Mt. Baiyun, Song County, Henan Province, 1 580 m, 22, 25 July 2002, coll. WANG Xir-Pu; 3 ♀♀, Baoxing County, Sichuan Province, 1 600 m, 2-3 Aug. 2004, coll. REN Ying-Dang; 5 ♀♀, Mabian Yizu Autonomous County, Sichuan Province, 1 500 m, 21-23 July 2004, coll. REN Ying-Dang; 1 ♂, 11 ♀♀, Mt. Baxian, Tianjin, 500

m, 8-11 Sep. 2005, coll. II Hour-Hun.

Distribution. China (Henan, Sichuan, Tianjin, Zhejiang); Ceylon, India, Japan, Sri Lanka.

Acria equilibricuris **Wang, sp. nov.** (Figs. 5, 10, 15)

Adult (Fig. 5) . Wing expanse 17.0-18.0 mm. Head white, posterior area pale grayish brown or grayish white. Antenna with scape grayish white mottled yellow on dorsal surface, pale yellowish white on ventral surface; flagellum pale yellowish white annulated with brown on dorsal surface, pale yellow on ventral surface, basal several segments white. Labial palpus white, mixed with pale brown on both outer and dorsal sides of second segment; third segment with pale brown ring at base, black or deep gray from about 1/2 to distal 1/4. Thorax and tegula grayish brown. Forewing grayish white or gray, mottled brown scales; costal margin ochreous



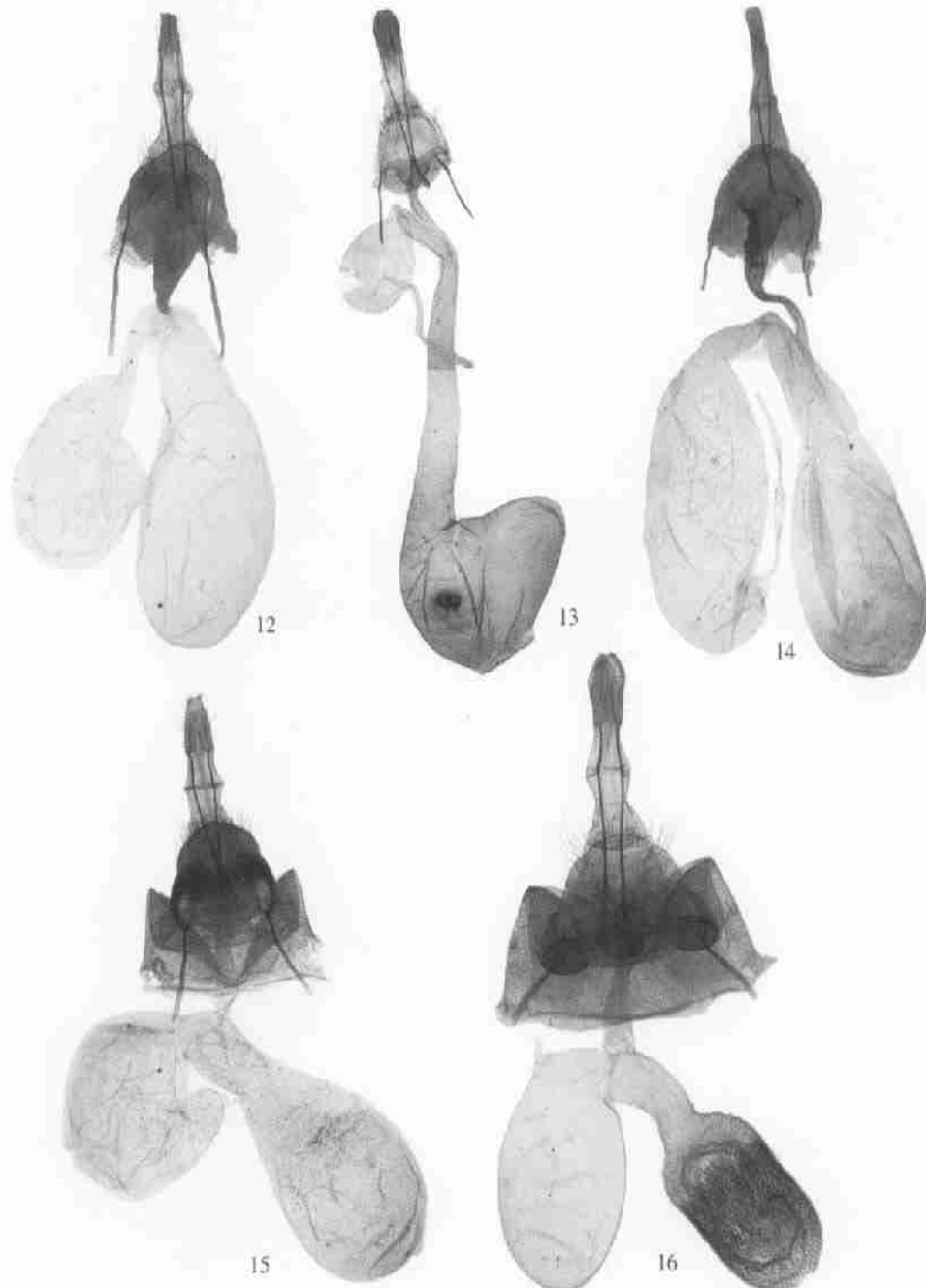
Figs 7-11. Male genitalia of *Acria* spp. 7. *A. ceramitis* Meyrick. 8. *A. nivalis* Wang et Li. 9. *A. emarginella* Donovan. 10. *A. equilibricuris* Wang, sp. nov. 11. *A. arithorrhyncha* Wang, sp. nov.

yellowish brown in basal 1/3, pale ocherous yellow along notch, with yellowish brown scale tuft at 1/3 and 2/3 respectively; thin brown band from both side of notch extending to above dorsal corner of cell, forming a V pattern; thin brown band from below costal 2/3 arched outward, parallel with distal part of costal margin and termen, then reaching tornus; discal and discocellular stigmas brown, very small, rounded, with tiny scale tuft below discocellular stigma; dorsum brown basally; termen oblique, brown; cilia gray mottled brown except yellow at base. Hindwing and cilia grayish white. Legs yellowish white except foreleg brown on ventral surface,

tarsi ocherous yellowish brown on ventral surface distally, black at apex. Abdomen yellowish white.

Male genitalia (Fig. 10). Uncus with basal 1/3 narrowed, distal 2/3 forklike, arched gently outward, ending in point. Socius oval. Valva wide in basal 3/5, bifurcate and produced to pointed processes distally, with sclerotized thin band extending from approximately basal 2/5 near costa narrowed to near end of costa, its base protruding downward in triangular form; costa straight basally, sinuate distally. Saccus narrow, acute apically. Phallus columniform, simple.

Female genitalia (Fig. 15). Papilla analis with basal



Figs 12-16. Female genitalia of *Aeria* spp. 12. *A. ceramitis* Meyrick. 13. *A. nivalis* Wang et Li. 14. *A. emarginella* Donovan. 15. *A. equibiauris* Wang, sp. nov. 16. *A. omithorhyncha* Wang, sp. nov.

3/4 approximately parallel sided laterally, distal 1/4 somewhat narrow, narrowly rounded caudally. Anterior apophysis shorter than half length of posterior apophysis; posterior apophysis with distal 1/3 dilated. Antrum inconspicuous; ductus bursae short, membranous. Corpus bursae oval; appendix bursae more or less rounded, with a small apical process; ductus seminalis originating from apex of appendix bursae.

Holotype ♂, Daozhen County (28°53' N, 107°36' E), Guizhou Province, 1 350 m, 24 Aug. 2004, coll. XIAO Yur-Li, genitalia slide No. YGX08018. Paratypes: 1 ♂, 5 ♀, 1 300-1 350 m, 24-25 Aug. 2004, same collector as holotype; 1 ♀, Mt. Leigong, Guizhou Province, 1 600 m, 18 Sep. 2005 coll. ZHANG Jia-Liang.

Distribution. China, Guizhou.

Diagnosis. This new species is similar to *A. ceramitis* Meyrick, but can be distinguished by the valva in male with bifurcate distal processes almost equal in length, the sacculus elongate narrow basally, and the antrum in female inconspicuous. In *A. ceramitis* Meyrick, the ventral process of the valva is longer than the costal one, the sacculus is parallelogrammic basally, and the antrum is inverted conical.

Etymology. The specific name is from the Latin prefix *equi-* (equal) and *bicruris* (bifurcate), in reference to the two distal processes of the valva more or less equal in length.

Aeria ornithorrhyncha Wang, sp. nov. (Figs. 6, 11, 16)

Adult (Fig. 6). Wing expanse 16.0-21.0 mm. Head grayish brown except frons white. Antenna ochreous gray on dorsal surface, white on ventral surface and on anterior margin; flagellum with basal several segments white, the remainder yellowish brown annulated with brown. Labial palpus with second segment grayish white tinged with ochreous brown, white at apex; third segment brown except white dorsally, with deep brown spot at distal 1/3. Thorax and tegula ochreous yellow. Forewing in male ochreous yellow, in female grayish brown; costal margin yellow from 1/3 to 2/3; brown spot at 1/3 and 2/3 respectively reaching above dorsal apical corner of cell, forming a V pattern; thin brown band from below costal 2/3 extending outward and parallel with costal margin, arched and parallel with termen, then oblique inward to tornus; discal and discocellular stigmas very small, black, with erect white scales below discocellular; termen oblique, with a series of deep brown dots; cilia pale yellow basally, with deep brown line medially, distal half yellow. Hindwing and cilia deep gray. Legs grayish white, brown ventrally; mid tarsus ochreous brown distally except black at apex. Abdomen pale yellow on ventral surface, ochreous yellow on dorsal surface.

Male genitalia (Fig. 11). Uncus narrowed at base, forked distally, narrowed to pointed apex, arched outward at about middle laterally. Socius oval. Valve short and broad, somewhat triangular in shape; costa produced to a small pointed process distally. Sacculus broad, narrowed, beaklike distally, forming an apical process. Phallus columniform, with strong spines distally.

Female genitalia (Fig. 16). Papilla analis with basal 3/5 parallel sided laterally, slightly narrowly rounded caudally. Anterior apophysis stout, shorter than half length of apophysis posterior; posterior apophysis long and thin, distal 1/3 expanded. Antrum inconspicuous; ductus bursae membranous. Corpus bursae more or less rectangular; basal 1/3 with warts, distal 2/3 with dense triangular spines; appendix bursae large, elongate oval, longer than corpus bursae; ductus seminalis from posterior 1/4 of appendix bursae.

Holotype ♂, Kadoorie Agricultural Research Centre (114°114' E, 22°428' N), Hong Kong, 210 m, 13 Apr. 2007, coll. U Hou-Hun *et al.*, genitalia slide No. YGX08031. Paratypes: 4 ♀, 140-210 mm, 13-16 Apr. 2007, other same data as for holotype; 1 ♂, Heshan, Guangdong Province, 10 Oct. 2002, coll. LIU Gui-Lin and ZHANG Bing-Lan; 1 ♀, Heshan, 6 Nov. 2002, 1 ♀, Heshan, 27 June 2002, coll. LIU Gui-Lin; 1 ♂, Heshan, 26 Aug. 2002, coll. LIU Gui-Lin, JIA Feng-Long and CHEN Hai-Dong; 1 ♀, Dawuling Nature Reserves, Xinyi, Guangdong Province, 1 000 m, 8 Aug. 2003, coll. ZHANG Dan-Dan.

Distribution. China (Guangdong, Hongkong).

Diagnosis. This new species can be separated from its congeners by the male costa produced to a pointed process and the sacculus beaklike distally; and by the female corpus bursae rectangular, with dense triangular spines in distal 2/3.

Etymology. The specific name is from the Latin *ornithorrhynchus* (beaklike), referring to the apical process of the sacculus.

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中国凹宽蛾属修订 (鳞翅目, 小潜蛾科, 宽蛾亚科)

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摘 要 对中国凹宽蛾属 *Aria* Meyrick 进行了修订, 共报道该属昆虫 5 种, 包括 2 新种: 等叉凹宽蛾 *A. equibicuris* Wang, sp. nov. 和喙腹凹宽蛾 *A. ornithorrhyncha* Wang, sp. nov.。成虫照片和雌性外生殖器特征图一并给出, 并提供了中国已知种类检索表。研究标本包括新种模式标本保存在南开大学昆虫标本室。

关键词 鳞翅目, 小潜蛾科, 宽蛾亚科, 凹宽蛾属, 修订, 新种, 中国.

中图分类号 Q969.426.6

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